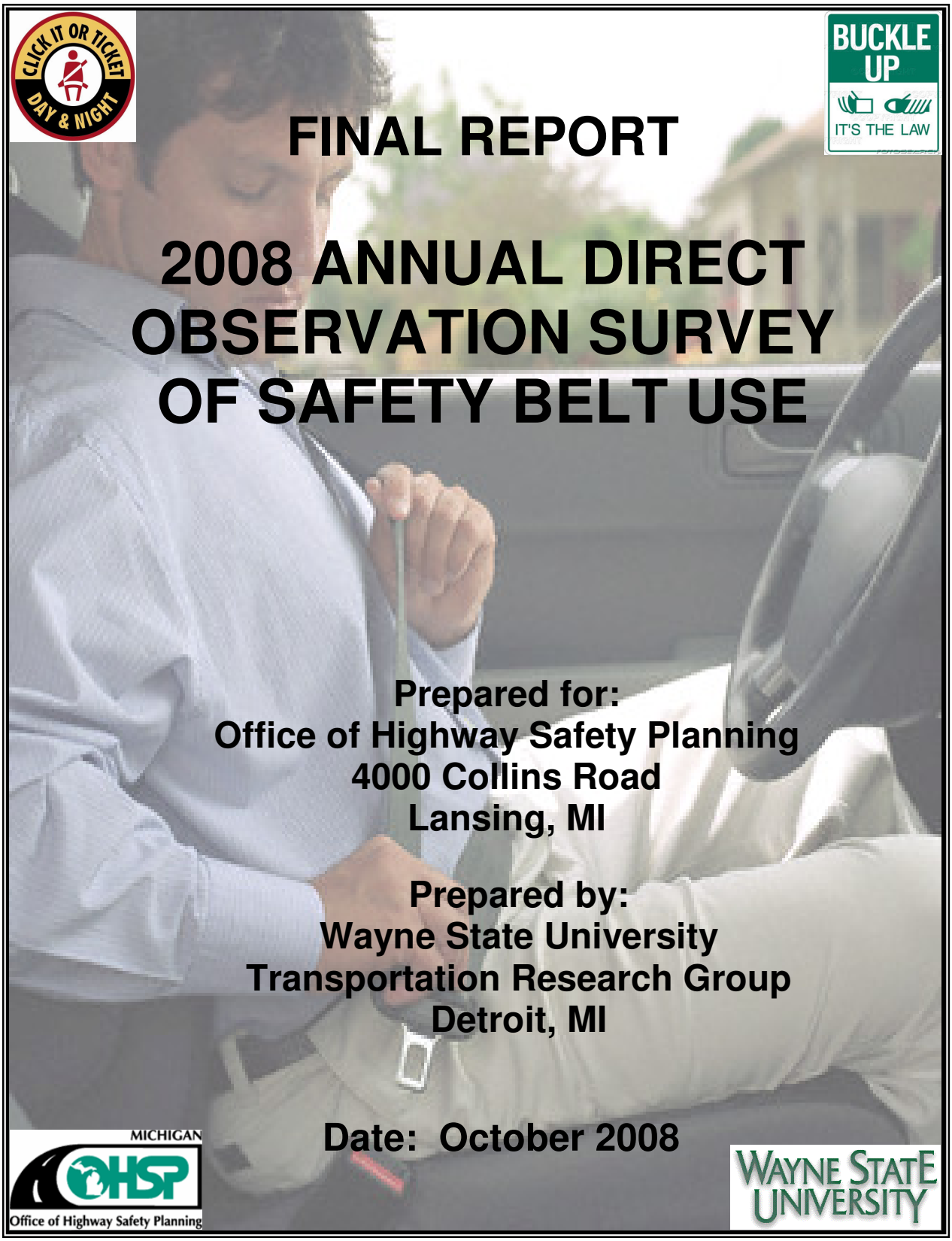

FINAL REPORT

2008 ANNUAL DIRECT OBSERVATION SURVEY OF SAFETY BELT USE

Prepared for:
Office of Highway Safety Planning
4000 Collins Road
Lansing, MI

Prepared by:
Wayne State University
Transportation Research Group
Detroit, MI

Date: October 2008

MICHIGAN OHSP Office of Highway Safety Planning

WAYNE STATE UNIVERSITY

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16. Abstract This study reports the results of the 2008 Annual Direct Observation Survey of safety belt use. One hundred and ninety-two (192) intersection/interchange sites were observed near Labor Day weekend. All drivers and front-seat passengers were observed for safety belt use and categorized by vehicle type, vehicle use, gender, age and race. The results of this survey show that the safety belt usage rate in the State of Michigan is 97.2 percent. Males and pick-up truck drivers continue to trail in the use of safety belts.			
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Technical Report Documentation Page

TABLE OF CONTENTS

PAGE

LIST OF FIGURES

PAGE

LIST OF TABLES

1.0 INTRODUCTION

Increasing the use of safety restraint systems, while driving or traveling as a passenger in an automobile, is one of the most efficient and cost-effective ways of reducing injuries and fatalities on the nation's highways. Efforts have been made to increase the use of safety belts over three decades, yet according to the 2007 nationwide safety belt surveys, approximately 18 percent of the drivers and front-seat passengers do not buckle up while driving or riding as a front-seat passenger in an automobile in 2007 [1]. In Michigan, past statewide safety belt use studies indicate that the overall use by drivers and front-seat passengers has been increasing consistently from 2001 to 2006 while the usage rate in 2007 remained about the same as the previous year. The past eight years' statewide safety restraint use is as follows:

2000 - 83.5%
2001 - 82.3%
2002 - 82.9%
2003 - 84.8%
2004 - 90.5%
2005 - 92.9%
2006 - 94.3%
2007 - 93.7%

The above data indicates that the safety belt use rate in Michigan is far ahead of the national average and is one of twelve states and territories with reported safety belt use rates greater than 90 percent [1]. It is important to recognize that Michigan is a "primary law" state, which means a motorist can be stopped and cited for the sole reason of not wearing a safety belt while driving or riding as a front-seat passenger. In "secondary law" states, motorists must be stopped for another traffic-related offense in order to be ticketed for not wearing a safety belt. The "primary law" states averaged a safety belt use rate of 87 percent as compared to the "secondary law" states, which only averaged 73 percent in 2007 [2].

The use of safety belts is the single most effective means of reducing fatal and non-fatal injuries in vehicular crashes. The reduction in the severity of injuries has proven to be linked to the use of safety belts by many studies in the past. In 2007, 28,933 passenger vehicle occupants were killed in traffic crashes in the USA [3]. Of the 28,141 passenger vehicle occupant fatalities for

which the safety belt use rate was known, approximately 55 percent of the occupants were unrestrained [2]. The National Highway Traffic Safety Administration (NHTSA) estimates that an 80 percent safety belt use rate can save more than 15,000 lives per year and an overall societal cost saving of 50 billion dollars in the country each year [4]. The NHTSA established that 211,128 lives have been saved between 1975 and 2005 due to the use of safety belts [5].

Currently, airbag systems are a part of standard equipment in all vehicles. Vehicles equipped with airbags need the occupants to be restrained by safety belts in order to be effective in saving lives and reducing injuries in the event of a severe crash. Safety belts protect vehicle occupants in the following ways:

- Reduces the chance of being in contact with the interior of the vehicle,
- Prevents the occupants from ejection, and
- Prevents occupants from being too close to the deployed airbags, thus avoiding severe injuries from the airbags, ejection from the vehicle and vehicle interior contacts.

Past research indicates that the use of safety belts reduces the risk of fatal injury for the driver and front seat passengers by approximately 45 percent for passenger vehicles and 60 percent for light trucks. Moreover, the use of safety belts reduces the risk of moderate to critical injury by 50 percent for occupants of passenger vehicles and 65 percent for the occupants of light trucks [5]. Therefore, a small increase in safety belt use often results in a large overall savings to society.

The non-use of safety belts is a behavioral issue, so programs targeted to change driver behavior related to the use of safety belts often leaves a long lasting impact on the affected drivers and thus, continues to increase the safety belt use rate in the driving population. Various safety belt use improvement programs are often targeted to specific areas within a state. Knowing the areas within a state that have lower safety belt use rates may assist the program coordinators in the Office of Highway Safety Planning (OHSP) to allocate enforcement funding to specific areas, which may result in higher rates of safety belt use. There are, of course, statewide initiatives, which are expected to impact the entire state. The safety belt use data can be used for the following:

- To fulfill reporting requirements to NHTSA.
- To allocate statewide safety funding to specific program areas.
- To provide targeted funding to specific areas within the state where use rates are lower than the statewide average.
- To provide targeted programs for certain segments of the population.

1.1 Study Purpose and Objectives

The purpose of this study was to perform an annual observational survey for 192 intersections/interchanges to determine the percentage of drivers and front-seat passengers utilizing their safety belts.

The specific objectives of this study were as follows:

- Finalize the methodology for collecting data for a representative sample of sites throughout the State, which ensured reliable statewide statistics, in an economically feasible manner.
- Provide training to all staff conducting the observation surveys and conduct Quality Assurance/Quality Control (QA/QC) of the data collection efforts.
- Conduct the annual observational surveys of safety belt use around and during the Labor Day holiday.
- Summarize and cross-tabulate the observational data in a spreadsheet format indicating overall safety belt use, safety belt use by stratum, safety belt use by time of day and day of week, and safety belt use by demographic characteristics.
- Continue to track the changes in safety belt use. Generate necessary comparative data and statistical analyses to access the relevancy of the 2008 annual observational data and results to previous observational results.

1.2 Study Area

The study area for the statewide observational survey included the counties that represented at least 85 percent of the population in the State of Michigan.

2.0 METHODOLOGY

In order to develop targeted public awareness programs to increase safety belt use, one must know the distribution of safety belt use rates in various parts of the state and among various demographic groups, in addition to knowing the overall safety belt use rate in the state. It is, however, important to capture the statewide use rate following the sampling strategy and data collection procedure recommended by NHTSA. WSU-TRG performed such observational surveys in the state as a part of this project.

The site selection methodology for this study followed the procedure used in the Direct Observation of Safety Belt Use in Michigan surveys for the years 2000 to 2007. The uniform criteria, as presented in the Federal Register and the National Highway Traffic Safety Administration documents, were also examined carefully to ensure adherence to the nationwide standard. The methodology for annual observation direct survey is the same as used in the 2005, 2006 and 2007 evaluation, which followed NHTSA's guidelines, resulting in the selection of areas in the state to encompass 85 percent of the population. The methodology used including location selection that was completed in the 2004 evaluation of the Annual Observation Direct Survey is described in the following paragraphs.

NHTSA requires that the areas surveyed throughout the state encompass 85 percent of the population. The areas selected for the observation survey included 32 counties in the State of Michigan that represented 86.86 percent of the state's population, based upon 2004 U.S. Bureau of Census Data estimates as shown in Table 1. This sample of counties selected for the evaluation study fulfills NHTSA's requirements. The geographic locations of the counties included in the evaluation study are depicted in Figure 1.

A system for partitioning the candidate counties into various strata, based on vehicle miles traveled (VMT), was developed and is shown in Table 2. The number of observation sites for each stratum is also shown in Table 2. Forty-eight (48) sites were observed for Stratum 1, 50 sites for Stratum 2, 53 sites for Stratum 3, and 41 sites for Stratum 4. By using the same 192 sites as previously used, there is a more precise estimate of safety belt use. A complete listing of the 192 sites is provided in Appendix I.

Table 1. Population Data for the Selected Counties in Michigan
[Source: U.S. Census Bureau 2004 Estimates]

Name of County	Population	Percent Population	Cumulative Percent Population Statewide for Michigan	County Ranking by Population
Wayne	2,016,202	19.94%	19.94%	1
Oakland	1,213,339	12.00%	31.94%	2
Macomb	822,660	8.13%	40.07%	3
Kent	593,898	5.87%	45.94%	4
Genesee	443,947	4.39%	50.33%	5
Washtenaw	339,191	3.35%	53.69%	6
Ingham	280,073	2.77%	56.46%	7
Ottawa	252,351	2.50%	58.95%	8
Kalamazoo	240,724	2.38%	61.33%	9
Saginaw	209,062	2.07%	63.40%	10
Livingston	177,538	1.76%	65.16%	11
Muskegon	174,401	1.72%	66.88%	12
St. Clair	170,916	1.69%	68.57%	13
Berrien	163,125	1.61%	70.18%	14
Jackson	162,973	1.61%	71.80%	15
Monroe	152,552	1.51%	73.30%	16
Calhoun	139,067	1.38%	74.68%	17
Allegan	112,477	1.11%	75.79%	18
Bay	109,480	1.08%	76.87%	19
Eaton	107,056	1.06%	77.93%	20
Lenawee	101,768	1.01%	78.94%	21
Lapeer	92,510	0.91%	79.85%	22
Midland	84,615	0.84%	80.69%	23
Grand Traverse	82,752	0.82%	81.51%	24
Van Buren	78,541	0.78%	82.29%	25
Shiawassee	73,125	0.72%	83.01%	26
Clinton	68,800	0.68%	83.69%	27
Marquette	64,874	0.64%	84.33%	28
Isabella	64,481	0.64%	84.97%	29
Ionia	64,378	0.64%	85.60%	30
Montcalm	63,627	0.63%	86.23%	31
St. Joseph	62,964	0.62%	86.86%	32
State of Michigan Total	**10,112,620**			

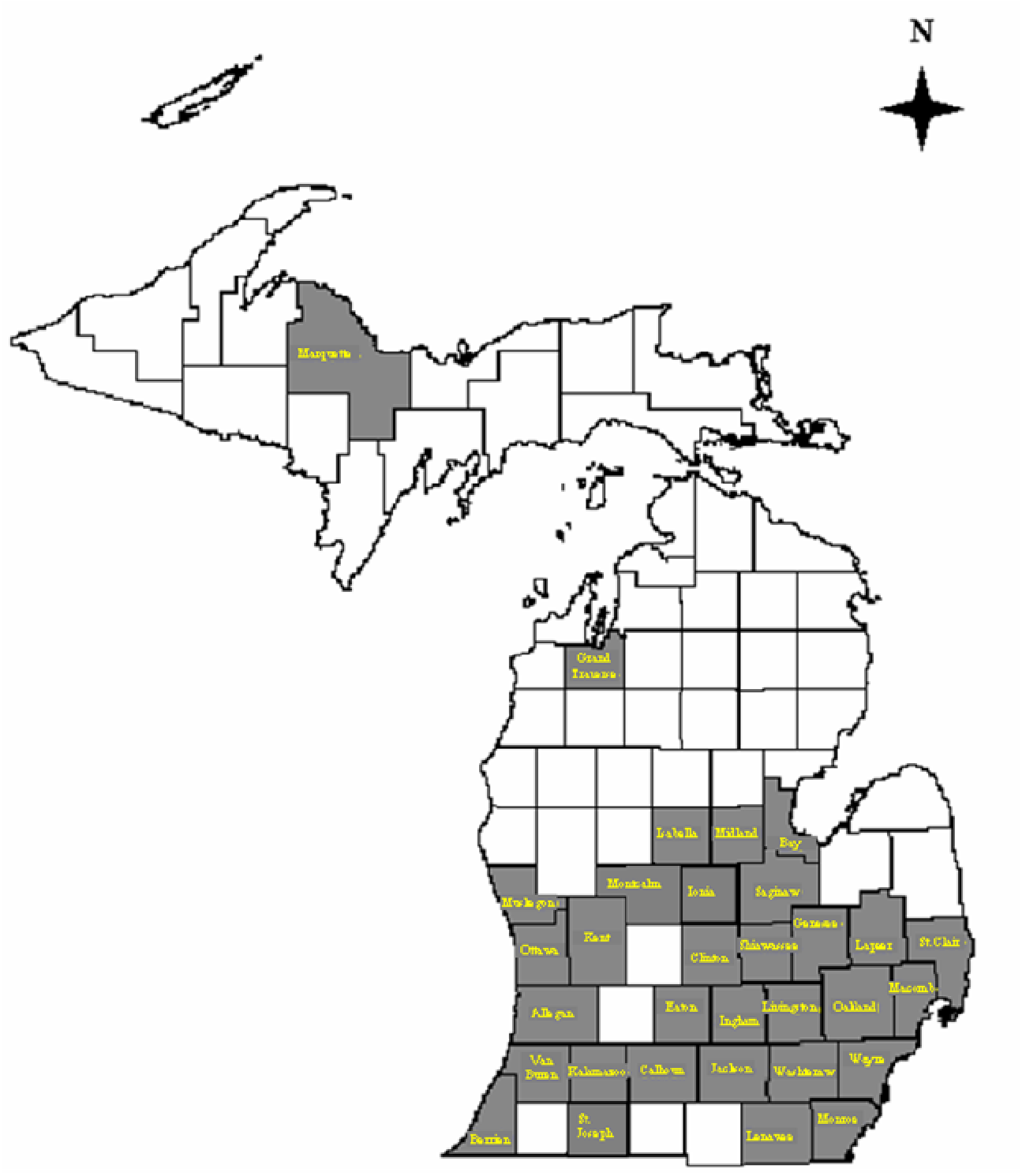

Figure 1. 32-County Statewide Sample for the Direct Observation Safety Belt Surveys

Table 2. 2004 Vehicle Miles of Travel by Stratum
[Source: Michigan Department of Transportation]

	VMT (2004) (in Thousands)	Total VMT (in Thousands)	Percent of Total VMT	Number of Sites
Stratum 1				
Ingham	2,589,095			
Kalamazoo	2,603,446			
Oakland	13,113,695			
Washtenaw	3,742,005			
Total Stratum 1 VMT		22,048,241	25.06%	48
Stratum 2				
Allegan	1,234,491			
Bay	1,325,042			
Eaton	1,189,516			
Grand Traverse	806,758			
Jackson	1,723,634			
Kent	5,773,450			
Livingston	1,954,324			
Macomb	6,527,891			
Midland	827,006			
Ottawa	2,077,284			
Total Stratum 2 VMT		23,439,396	26.64%	50
Stratum 3				
Berrien	2,180,694			
Calhoun	1,731,659			
Clinton	1,140,428			
Genesee	4,731,531			
Ionia	714,959			
Isabella	587,432			
Lapeer	892,081			
Lenawee	898,211			
Marquette	629,897			
Monroe	2,143,438			
Montcalm	589,027			
Muskegon	1,447,105			
Saginaw	2,259,369			
Shiawassee	779,541			
St. Clair	1,624,723			
St. Joseph	579,553			
Van Buren	1,000,428			
Total Stratum 3 VMT		23,930,076	27.19%	53
Stratum 4				
Wayne	18,575,126			
Total Stratum 4 VMT		18,575,126	21.11%	41
Total Strata VMT		**87,992,839**	**100%**	**192**

The locations of the 192 observation sites were randomly selected from intersections and limited access highways. The sites were randomly chosen in the 2005 Evaluation of May *Click It or Ticket* study using a method that ensured an equal probability for each location in each stratum being selected as a candidate study location. For the selection of the candidate locations, large equal scale (3/8 inch = 1 mile) road maps were obtained for each county. A computerized grid was overlaid on each county map at 0.5-mile intervals in the horizontal and vertical directions of the map. These squares represented a square area of 0.25 square miles. For the selection of intersection, each grid on the county map was assigned two numbers representing an X and Y coordinate and was also assigned a number by stratum. For each stratum, a random number was chosen between one and the number of grids covering the stratum. Then two additional random numbers were selected representing the X and Y coordinates of the selected grid. Random coordinates were chosen until an intersection was found located in the grid coordinates. This process was repeated until the required number of intersection observation sites were selected for all four strata. In addition, alternative secondary intersections were selected for each primary intersection. Secondary intersections were selected within a 16 square mile area from the primary intersection location. For the selection of observation sites along limited access highways, exit ramps were selected. This was done by sequentially numbering all the exit ramps on limited access highways located within each stratum. Random numbers were then selected between one and the number of ramps to determine which exit ramps would be considered as candidate observation locations. An alternate exit ramp was also selected for each candidate observation location.

Upon the determination of the sites, the direction of traffic flow, day of the week and time of day at each observation location was determined through a similar random sampling method ensuring equal probability. For each intersection randomly selected, the direction of traffic flow for observation was also randomly selected. Random numbers between one and four were assigned for each primary and secondary intersection's direction of traffic movement. The selected random numbers represented "1" for eastbound, "2" for southbound, "3" for westbound and "4" for northbound. This process allowed a random selection of the direction of traffic flow as well as the roadway for inclusion in the observation study. In order to minimize the travel time and

distance required to conduct this study, the observation sites were clustered into geographic regions upon final selection without compromising the randomness of the data.

3.0 OBSERVATIONAL STUDY DATA COLLECTION

For each selected observation site, a minimum of 50 vehicles were observed in at least a 50-minute time frame. If 50 observations were not completed in 50 minutes, the observer stayed longer at the same location and collected safety belt use data until 50 observations were captured at that site. These observations were appropriately reweighted, as explained in the Data Analysis section of this report. The data collected for the 192 observation sites provided an accurate representation for each day of the week and each hour of the day for the safety belt use characteristics of the state.

Only non-moving vehicles were observed at each site, due to the difficulty of accurately observing the safety belt use data while the target vehicle is moving. This included vehicles stopped at a stop sign or at a red light of a traffic signal. Since it is not possible to accurately observe all vehicles passing the observation site, while collecting the safety belt use data, a 10-minute traffic count of all vehicles passing the observation point was the basis for estimating the number of vehicles passing the observation site per unit of time. This data introduced a weighting factor for each observation site. The 10-minute count was collected in two 5-minute intervals; five minutes prior to the observational period and five minutes following the observational period.

Data collection for the Annual Direct Observation Survey occurred between August 9, 2008 and September 14, 2008.

The driver of each vehicle and the passenger in the front right seat of the vehicle were observed for safety belt use, non-use and misuse. The driver belt observational categories included Not Belted, Belted, Shoulder Belt Behind Back, and Shoulder Belt Under Arm. The passenger belt categories were the same as the driver belt categories and also included the observation of child seats when present in the front passenger seat. In the surveys, both the driver and front-seat

passenger were separately identified based upon their gender, estimated age and race. The driver age categories included 16-29, 30-59, and 60 and over. The passenger age categories included 0-3, 4-15, 16-29, 30-59, and 60 and over. The driver and passenger races were categorized as Caucasian, African American, Asian or Pacific Islander, Hispanic, and Native American. The vehicles were categorized into four groups: Passenger Vehicles, Sport Utility Vehicles, Vans or Minivans, and Pick-up Trucks. The vehicles were also identified as being Commercial or Non-commercial vehicles.

The data collected in the field was recorded and returned to the office; observations were manually recorded on survey forms and returned back to the office within 24 hours of the data collection. This manual method was chosen due to concerns with computer screen visibility in sunlight or rainy conditions. The WSU-TRG believes that the manual method also increases the accuracy and data verification at the time of data entry.

4.0 OBSERVER TRAINING

Members of the WSU-TRG staff participated in the data collection for this project. Each of these staff members has or is pursuing an engineering degree and has been trained in general traffic data collection methods and procedures. For this project, each data collector received specific training composed of a day-long workshop, technical assistance, and field data collection exercises. Each member of the data collection team participated in a reliability and repeatability study to reach a 95 percent or greater reliability and repeatability in their field data collection tests prior to being deployed for the data collection for this project. The repeatability of a measurement depends on the within-subject standard deviation, which can be calculated using a sample of closely repeated measurements. The repeatability coefficient is simply the within-subject standard deviation adjusted by a probability-based factor and is an estimate of the maximum difference likely to occur between two successive measurements on the same subjects. Reliability concerns the extent to which repeated measurements by the same method on the same subject produce the same result.

The reliability and repeatability study was performed at the intersection of Cass Avenue and Warren Avenue, near the Wayne State University campus in Detroit, Michigan. This intersection represents a typical moderately high volume intersection that could be challenging for observational data collection. For a period of 9 days, the entire group of twelve observers were randomly divided into two equal groups and assigned to collect safety belt observational data independently. The two opposite directions of traffic flow were observed one by each group. Although the six observers in a group were observing the same traffic flow by direction, they did not interact or consult and did not necessarily observe the same vehicles. They were located physically apart to ensure the independence of their data collection.

The data was then summarized and compared among the six observers in each group to determine the accuracy of their observations. Accuracy for each data collection entity was calculated to be greater then 95 percent. This training was given to the data collectors approximately three weeks prior to the wave of field data collection. Upon completion of the training for the data collection, each member of the team received a training manual composed of the information received during the training session, the schedule of data collection and all necessary field supplies.

Two field supervisors monitored the performance of the field observers. In order to establish a baseline reference of 'expected' safety belt use rates, preliminary observation data from previous studies was obtained for each stratum. The field data collectors submitted their observation data on a daily basis and it was immediately entered and compiled on computer spreadsheets at our WSU campus office. Comparisons were then made between the observed rates and the 'expected' safety belt use rates during the first statewide survey in order to identify any unexpected deviations in the data. Deviations were not found to be substantially different than anticipated.

5.0 DATA ANALYSIS

The data collected in the field was entered to form the database by a team member and verified for accuracy. Rates for safety belt use were determined for each survey stratum, county, location, etc., as well as the statewide average. A 95 percent confidence interval for the estimate of safety belt use was determined in order to meet the guidelines of NHTSA.

5.1 Weighted Safety Belt Use Calculations

The weighting by the number of vehicles observed with the total possible number of vehicles passing the observation point has been performed as described in the following calculations. First the number of vehicles observed at each intersection divided by the length of the observation time and then multiplying that value by a standard 50-minute observational period, provides the total number of vehicles that passed the observation point in a standard 50-minute period. The number of vehicles observed in the 10-minute volume count was then multiplied by 5 to represent the total number of vehicles available for observation. The total number of vehicles was then divided by the adjusted number of vehicles observed passing the observation point. The resulting factor was the volume weighting factor for that particular intersection. The total number of drivers and passengers belted and not belted were then multiplied by the weighting factor to obtain the total number of weighted drivers and passengers that were belted and not belted. The weighted overall safety belt use rate by stratum was then determined by dividing the total number of belted drivers and passengers by the total number of drivers and passengers. The following calculations further describe the procedure outlined above.

Ottawa County, 112th Ave and Polk St Intersection

Survey length = 90 minutes

Number of vehicles observed in 90 minutes = 50 vehicles

10-minute volume count = 7 vehicles

Standard 50-minute observational frequency (Adjusted number of vehicles) =

$$\frac{Number\ of\ Vehicles\ Observed}{Survey\ Length} \times 50\ minutes = \frac{50\ vehicles}{90\ minutes} \times 50\ minutes = 28\ vehicles\ in\ 50\ minutes$$

Total number of vehicles available for observation = 10-minute vehicle count x 5 =

7 vehicles x 5 intervals = 35 vehicles in 50 minutes

$$\text{Intersection volume weighting factor} = \frac{Total\ Number\ of\ Vehicles}{Adjusted\ Number\ of\ Vehicles} = \frac{35}{28} = 1.25$$

The variance for each stratum was determined by following Cochran's equation [9] as follows:

$$Variance = \frac{n}{n-1}\sum_i \left(\frac{g_i}{\sum g_k}\right)^2 (r_i - r)^2 \qquad [6]$$

Where.

n = number of observation locations

g_i = number of observations at each location

g_k = total number of observations within a stratum

r_i = safety belt use rate for each strata

r = overall safety belt use rate

5.2 Overall Statewide Safety Belt Use Calculations

The weighted safety belt use rate was calculated by summing up the strata safety belt use rates, each multiplied by a vehicle miles of travel weighting factor for that stratum, divided by the sum of the vehicle miles of travel weighting factors. The 2006 vehicle miles of travel from the Michigan Department of Transportation as shown in Table 3 were used for these calculations. The four vehicle miles of travel totals were compared and Stratum 2 had the highest total, 24,302,968 thousand, and was assigned a factor of 1.0. The other three strata's weighting factors were determined by dividing the vehicle miles of travel for that stratum by Stratum 2's vehicle miles of travel. Stratum 1 was assigned a weighting factor equal to 0.93 (22,707,561 VMT divided by 24,302,968 VMT). Stratum 3 was assigned a weighting factor equal to 0.99 (24,132,251 VMT divided by 24,302,968 VMT). Stratum 4 was assigned a weighting factor equal to 0.79 (19,200,274 VMT divided by 24,302,968 VMT). The total weighting factors equaled 3.71.

The overall statewide variance was calculated in a similar manner as the overall statewide safety belt use rate. The overall statewide variance was found by summing the product of each stratum's variance by the squared weighting factor and divided by the squared sum of the total weighting factors.

Table 3. 2006 Vehicle Miles of Travel by Stratum
[Source: Michigan Department of Transportation]

	VMT (2006) (in Thousands)	Total VMT (in Thousands)
Stratum 1		
Ingham	2,544,544	
Kalamazoo	2,561,015	
Oakland	13,651,064	
Washtenaw	3,950,938	
Total Stratum 1 VMT		**22,707,561**
Stratum 2		
Allegan	1,338,792	
Bay	1,336,510	
Eaton	1,197,139	
Grand Traverse	772,264	
Jackson	1,616,859	
Kent	6,101,671	
Livingston	2,147,872	
Macomb	6,782,685	
Midland	784,659	
Ottawa	2,224,517	
Total Stratum 2 VMT		**24,302,968**
Stratum 3		
Berrien	2,037,502	
Calhoun	1,710,252	
Clinton	1,149,154	
Genesee	4,592,865	
Ionia	769,629	
Isabella	580,995	
Lapeer	987,564	
Lenawee	888,001	
Marquette	631,810	
Monroe	2,261,324	
Montcalm	588,194	
Muskegon	1,620,988	
Saginaw	2,200,357	
Shiawassee	795,770	
St. Clair	1,752,145	
St. Joseph	578,042	
Van Buren	987,659	
Total Stratum 3 VMT		**24,132,251**
Stratum 4		
Wayne	19,200,274	
Total Stratum 4 VMT		**19,200,274**
	Total Strata VMT	**90,343,054**

The 95 percent confidence interval is equal to the weighted safety belt use rate plus/minus 1.96 (for the Z-test at alpha = 0.05) multiplied by the square root of the stratum's or statewide variance expressed as a percent. The standard error is equal to the square root of the variance. The relative error must be less than five percent according to NHTSA guidelines and is equal to the standard error divided by the weighted statewide safety belt use rate.

The data was also analyzed and compared with studies from previous years to assess the progress of the safety belt campaign by the State of Michigan.

6.0 RESULTS AND CONCLUSIONS

6.1 Annual Direct Observation Survey

The Annual Direct Observational Survey was performed between Saturday, August 9th and Sunday, September 14th of 2008. During this observation period, a total of 15,048 observations were made at 192 observation sites randomly selected to represent statewide safety belt use.

The overall weighted statewide safety belt use rates are shown in Table 4. The overall weighted statewide safety belt use rates were calculated based upon the procedure described in the "Overall Statewide Safety Belt Use Calculations" section in the Data Analysis section of the report. The weighted percent of safety belt use referenced in the summary tables has been calculated per the "Weighted Safety Belt Use Calculations" as detailed in the Data Analysis section of this report. When the safety belt usage rates were calculated, belted occupants included drivers belted, front-seat passengers belted, and front-seat child passengers belted in a child seat. The non belted occupants included drivers and front-seat passengers not belted, belted under their arm and belted behind their back.

Table 4. Statewide Weighted Safety Belt Use Rate for Drivers and Front-Seat Passengers

Observational Wave	Safety Belt Use Rate	Standard Error	Relative Error
Annual Direct Observational Survey	97.2% ± 0.23%	0.12%	0.12%
June Statewide Post-Enforcement Survey	96.2% ± 0.31%	0.16%	0.17%

The findings for the Annual Observational Survey for the strata are shown in Table 5. Additional breakdowns of the safety belt use rates and standard error at a county level are provided in Appendix II. Complete details of the observations on an intersection level are provided in Appendix III.

Table 5. Weighted Safety Belt Use Rate for Drivers and Front-Seat Passengers by Stratum

Stratum	Annual Direct Observational Survey		June Statewide Survey	
	Safety Belt Usage Rate*	Standard Error	Safety Belt Usage Rate*	Standard Error
Stratum 1	97.3% ± 0.38%	0.19%	96.0% ± 0.64%	0.32%
Stratum 2	97.2% ± 0.60%	0.30%	96.1% ± 0.64%	0.33%
Stratum 3	97.2% ± 0.38%	0.20%	96.2% ± 0.74%	0.38%
Stratum 4	97.1% ± 0.42%	0.22%	96.4% ± 0.33%	0.17%

* Weighted Safety Belt Usage ± 95% Confidence Band

Table 6 summarizes the descriptive statistics regarding the Annual Observation Survey for the vehicles, in terms of day of the week and time of the day.

Table 6. Statewide Descriptive Statistics

Day of the Week	Annual Safety Belt Observations			
	No. of Sites Observed	Percent of Sites in Day of Week	Actual Total No. of Observations (Vehicles)	Percent of Observations in Day of Week (Vehicles)
Sunday	25	13.0%	2034	13.5%
Monday	26	13.5%	1991	13.2%
Tuesday	25	13.0%	1835	12.2%
Wednesday	28	14.6%	2301	15.3%
Thursday	29	15.1%	2046	13.6%
Friday	31	16.1%	2482	16.5%
Saturday	28	14.6%	2359	15.7%
Total	**192**	**100.0%**	**15,048**	**100%**
Time of the Day	**Annual Safety Belt Observations**			
	No. of Sites Observed	**Percent of Sites in Time of Day**	**Actual Total No. of Observations (Vehicles)**	**Percent of Observations in Time of Day (Vehicles)**
7 am - 8 am	5	2.6%	429	2.9%
8 am - 9 am	9	4.7%	742	4.9%
9 am - 10 am	18	9.4%	1459	9.7%
10 am - 11 am	17	8.9%	1517	10.1%
11 am - 12 pm	24	12.5%	1692	11.2%
12 pm - 1 pm	24	12.5%	1922	12.8%
1 pm - 2 pm	22	11.5%	1652	11.0%
2 pm - 3 pm	24	12.5%	1742	11.6%
3 pm - 4 pm	22	11.5%	1470	9.8%
4 pm - 5 pm	15	7.8%	1314	8.7%
5 pm - 6 pm	11	5.7%	1005	6.7%
6 pm - 7 pm	1	0.5%	104	0.7%
Total	**192**	**100.0%**	**15,048**	**100.0%**

The safety belt use rate can be described by the overall use rate, by stratum, by vehicle type and by various demographics. Table 7 summarizes the safety belt use rate for the statewide survey by driver, front-seat passenger and total observations. As shown in Table 7, driver safety belt use increased by 3.1 percent and front-seat passenger safety belt use increased by 5.6 percent as compared with the 2007 Annual Observation Survey. It should be noted that the weighted safety belt use rates provided in Table 5 and Tables 7 through 18 vary from those provided in Table 4. The overall statewide weighted safety belt use percentages provided in Table 4 are calculated by weighting the safety belt use rates by VMT by stratum (as described in Section 5.2 Overall Statewide Safety Belt Use Calculations). The weighted safety belt use rates provided in Table 5 and Tables 7 through 18 are calculated by utilizing the intersection weighting factors (as described in Section 5.1 Weighted Safety Belt Use Calculations). As the data presented in Table 5 and Tables 7 through 18 are not subdivided by county or strata, the overall state weighted safety belt use rates utilizing the VMT calculation are not applicable.

Table 7. Statewide Safety Belt Use Summary

Driver Belt Use	Actual Total # of Obs. (Drivers Only)	Weighted Total # of Obs. (Drivers Only)	Weighted % of SBU (Drivers Only)
Not Belted	432	1,709	2.9%
Belted	14,579	56,683	96.9%
Belted Behind Back	15	46	0.1%
Belted Under Arm	22	57	0.1%
Total	**15,048**	**58,495**	**100.0%**

Table 7. Statewide Safety Belt Use Summary (Continued)

Passenger Belt Use	Actual Total # of Obs. (Passengers Only)	Weighted Total # of Obs. (Passengers Only)	Weighted % of SBU (Passengers Only)
Not Belted	73	221	1.5%
Child Seat	5	7	0.05%
Belted	4,189	14,725	98.2%
Belted Behind Back	6	16	0.1%
Belted Under Arm	7	24	0.2%
Total	**4,280**	**14,993**	**100.0%**
Total Belt Use	**Actual Total # of Obs. (Drivers & Passengers)**	**Weighted Total # of Obs. (Drivers & Passengers)**	**Weighted % of SBU (Drivers & Passengers)**
Not Belted	505	1,930	2.6%
Child Seat	5	7	0.01%
Belted	18,768	71,408	97.2%
Belted Behind Back	21	62	0.1%
Belted Under Arm	29	81	0.1%
Total	**19,328**	**73,488**	**100.0%**

Table 8 summarizes the statewide driver and front-seat passenger safety belt use rates by stratum and county. In Table 8, the counties are listed by stratum. All the four Strata have experienced an increase in safety belt use, as compared to 2007, with Stratum 4 having the highest increase in the usage rate of 4.4%, followed by Stratum 3 with 4.1%. Stratum 1 and Stratum 2 have experienced a relatively lower increase in the usage rate of 2.9% and 2.5% respectively. Because of the relatively low number of sites and/or observations in many counties, the safety belt use rates listed may not be fully representative of each county. The use rates indicated are the weighted average of the observations taken in each county.

Table 8. Statewide Safety Belt Use Rates by Stratum and County

Stratum 1	Actual Total # of Obs. (Drivers & Passengers)	Weighted Total # of Obs. (Drivers & Passengers)	Weighted % of SBU (Drivers & Passengers)
Ingham County	1,356	4,444	97.8%
Kalamazoo County	1,158	3,102	98.0%
Oakland County	1,267	6,420	96.8%
Washtenaw County	1,357	3,641	97.0%
Total	**5,138**	**17,607**	**97.3%**
Stratum 2	**Actual Total # of Obs. (Drivers & Passengers)**	**Weighted Total # of Obs. (Drivers & Passengers)**	**Weighted % of SBU (Drivers & Passengers)**
Allegan County	468	876	98.9%
Bay County	329	698	96.0%
Eaton County	767	1,359	97.1%
Grand Traverse County	303	1,316	96.4%
Jackson County	519	697	96.8%
Kent County	946	2,626	98.0%
Livingston County	443	1,869	95.9%
Macomb County	824	3,493	98.4%
Midland County	403	826	93.2%
Ottawa County	167	344	95.6%
Total	**5,169**	**14,104**	**97.2%**

Table 8. Statewide Safety Belt Use Rates by Stratum and County (Continued)

Stratum 3	Actual Total # of Obs. (Drivers & Passengers)	Weighted Total # of Obs. (Drivers & Passengers)	Weighted % of SBU (Drivers & Passengers)
Berrien County	260	832	95.6%
Calhoun County	411	1,095	96.6%
Clinton County	358	578	97.4%
Genessee County	497	2,706	97.2%
Ionia County	161	589	97.5%
Isabella County	82	157	97.5%
Lapeer County	180	523	98.9%
Lenawee County	294	636	99.1%
Marquette County	401	630	97.5%
Monroe County	702	1,652	96.5%
Montcalm County	227	403	96.3%
Muskegon County	256	339	96.5%
Saginaw County	68	68	97.1%
St.Clair County	304	1,038	98.2%
St.Joseph County	172	548	96.5%
Shiawasee County	271	577	96.2%
Van Buren County	470	1,668	97.8%
Total	**5,114**	**14,039**	**97.2%**
Stratum 4	**Actual Total # of Obs. (Drivers & Passengers)**	**Weighted Total # of Obs. (Drivers & Passengers)**	**Weighted % of SBU (Drivers & Passengers)**
Wayne County	**3,907**	**27,738**	**97.1%**

Tables 9 through 13 summarize occupant safety belt use for drivers and front-seat passengers by vehicle type for the day of the week, time of the day, gender, age and race for the Annual Observation Survey.

Table 9. All Vehicles Statewide Summary

Day of the Week	All Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	2,965	6,586	97.4%
Monday	2,493	12,188	96.8%
Tuesday	2,221	6,699	97.0%
Wednesday	2,805	14,081	97.5%
Thursday	2,533	15,322	96.8%
Friday	3,097	11,601	97.5%
Saturday	3,214	7,011	97.3%
Total	**19,328**	**73,488**	**97.2%**
Time of the Day	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
7 am - 8 am	511	2,785	97.3%
8 am - 9 am	890	2,909	97.2%
9 am - 10 am	1,807	5,724	97.3%
10 am - 11 am	1,936	7,373	96.9%
11 am - 12 pm	2,279	6,677	96.9%
12 pm - 1 pm	2,443	10,474	97.1%
1 pm - 2 pm	2,162	8,013	97.1%
2 pm - 3 pm	2,233	9,019	96.9%
3 pm - 4 pm	1,920	6,872	97.9%
4 pm - 5 pm	1,721	7,977	97.4%
5 pm - 6 pm	1,297	4,858	97.1%
6 pm - 7 pm	129	807	96.2%
Total	**19,328**	**73,488**	**97.2%**

Table 9. All Vehicles Statewide Summary (Continued)

Vehicle Type	All Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Passenger Cars	9,257	36,501	97.2%
Vans/Minivans	2,528	9,737	97.2%
Sport Utility	4,328	16,806	97.8%
Pick-Up Trucks	3,215	10,444	96.0%
Total	**19,328**	**73,488**	**97.2%**
Gender	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Male	10,383	38,506	96.3%
Female	8,945	34,982	98.2%
Total	**19,328**	**73,488**	**97.2%**
Age	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
0-3	7	15	100.0%
4-15	330	1,183	98.1%
16-29	4,912	18,555	96.5%
30-59	10,705	41,102	97.0%
60+	3,374	12,633	98.4%
Total	**19,328**	**73,488**	**97.2%**
Race	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Caucasian	17,250	61,201	97.5%
African American	1,662	10,364	95.3%
Asian or Pacific Islander	208	1,201	99.0%
Hispanic	208	722	96.8%
Native American	0	0	N/A
Total	**19,328**	**73,488**	**97.2%**

Table 10. Passenger Cars Statewide Summary

Day of the Week	Passenger Cars Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	1,447	3,291	97.6%
Monday	1,162	6,067	95.6%
Tuesday	1,079	3,524	97.7%
Wednesday	1,377	7,431	97.7%
Thursday	1,261	7,732	96.6%
Friday	1,293	4,789	97.8%
Saturday	1,638	3,667	98.3%
Total	**9,257**	**36,501**	**97.2%**
Hour of the Day	**Passenger Cars Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
7 am - 8 am	276	1,518	98.0%
8 am - 9 am	413	1,406	98.4%
9 am - 10 am	830	2,844	97.2%
10 am - 11 am	967	3,433	98.2%
11 am - 12 pm	1,092	3,407	97.2%
12 pm - 1 pm	1,165	5,236	96.4%
1 pm - 2 pm	1,032	3,966	97.1%
2 pm - 3 pm	1,034	4,429	97.0%
3 pm - 4 pm	953	3,584	98.4%
4 pm - 5 pm	798	3,858	96.4%
5 pm - 6 pm	626	2,376	96.7%
6 pm - 7 pm	71	444	94.4%
Total	**9,257**	**36,501**	**97.2%**

Table 10. Passenger Cars Statewide Summary (Continued)

Gender	Passenger Cars Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	4,557	17,808	96.2%
Female	4,700	18,693	98.1%
Total	**9,257**	**36,501**	**97.2%**
Age	**Passenger Cars Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
0-3	1	1	100.0%
4-15	122	524	98.3%
16-29	2,963	11,422	96.4%
30-59	4,430	17,816	97.2%
60+	1,741	6,738	98.6%
Total	**9,257**	**36,501**	**97.2%**
Race	**Passenger Cars Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
Caucasian	8,048	29,051	97.5%
African American	1,008	6,407	95.5%
Asian or Pacific Islander	131	794	98.6%
Hispanic	70	249	97.2%
Native American	0	0	N/A
Total	**9,257**	**36,501**	**97.2%**

Table 11. Sport Utility Vehicles Statewide Summary

Day of the Week	Sport Utility Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	691	1,548	98.3%
Monday	520	2,688	98.8%
Tuesday	407	1,264	98.7%
Wednesday	669	3,287	97.8%
Thursday	551	3,311	96.7%
Friday	762	3,105	98.1%
Saturday	728	1,603	96.8%
Total	**4,328**	**16,806**	**97.8%**
Hour of the Day	**Sport Utility Vehicles Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
7 am - 8 am	104	558	98.4%
8 am - 9 am	211	699	98.4%
9 am - 10 am	427	1,404	98.4%
10 am - 11 am	411	1,829	96.3%
11 am - 12 pm	525	1,517	97.3%
12 pm - 1 pm	541	2,321	99.1%
1 pm - 2 pm	465	1,686	97.6%
2 pm - 3 pm	524	2,097	97.1%
3 pm - 4 pm	402	1,570	97.4%
4 pm - 5 pm	404	1,933	97.8%
5 pm - 6 pm	283	998	99.4%
6 pm - 7 pm	31	194	96.9%
Total	**4,328**	**16,806**	**97.8%**

Table 11. Sport Utility Vehicles Statewide Summary (Continued)

Gender	Sport Utility Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	1,981	7,401	97.1%
Female	2,347	9,405	98.4%
Total	**4,328**	**16,806**	**97.8%**
Age	**Sport Utility Vehicles Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
0-3	2	8	100.0%
4-15	100	349	98.0%
16-29	966	3,585	97.6%
30-59	2,653	10,586	97.7%
60+	607	2,278	98.5%
Total	**4,328**	**16,806**	**97.8%**
Race	**Sport Utility Vehicles Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
Caucasian	3,849	14,134	98.1%
African American	380	2,271	95.7%
Asian or Pacific Islander	50	229	99.6%
Hispanic	49	172	99.4%
Native American	0	0	N/A
Total	**4,328**	**16,806**	**97.8%**

Table 12. Vans/Minivans Statewide Summary

Day of the Week	Vans/Minivans Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	389	854	97.7%
Monday	343	1,539	98.8%
Tuesday	287	803	94.3%
Wednesday	369	1,951	96.7%
Thursday	321	2,103	97.7%
Friday	449	1,693	97.5%
Saturday	370	794	96.0%
Total	**2,528**	**9,737**	**97.2%**
Hour of the Day	**Vans/Minivans Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
7 am - 8 am	69	369	98.1%
8 am - 9 am	118	381	94.2%
9 am - 10 am	203	640	95.6%
10 am - 11 am	239	918	96.1%
11 am - 12 pm	285	897	98.0%
12 pm - 1 pm	305	1,312	96.1%
1 pm - 2 pm	298	1,092	97.8%
2 pm - 3 pm	317	1,257	97.1%
3 pm - 4 pm	265	918	97.5%
4 pm - 5 pm	239	1,202	99.9%
5 pm - 6 pm	169	620	95.8%
6 pm - 7 pm	21	131	100.0%
Total	**2,528**	**9,737**	**97.2%**

Table 12. Vans/Minivans Statewide Summary (Continued)

Gender	Vans/Minivans Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	1,287	4,956	96.5%
Female	1,241	4,781	97.9%
Total	**2,528**	**9,737**	**97.2%**
Age	**Vans/Minivans Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
0-3	1	1	100.0%
4-15	56	193	96.4%
16-29	357	1,382	96.7%
30-59	1,589	6,114	97.2%
60+	525	2,047	97.8%
Total	**2,528**	**9,737**	**97.2%**
Race	**Vans/Minivans Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
Caucasian	2,290	8,328	97.7%
African American	176	1,107	93.9%
Asian or Pacific Islander	20	137	100.0%
Hispanic	42	165	92.1%
Native American	0	0	N/A
Total	**2,528**	**9,737**	**97.2%**

Table 13. Pick-up Trucks Statewide Summary

Day of the Week	Pickup Trucks Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	438	893	95.4%
Monday	468	1,894	96.1%
Tuesday	448	1,108	95.1%
Wednesday	390	1,412	96.5%
Thursday	400	2,176	96.8%
Friday	593	2,014	95.6%
Saturday	478	947	95.9%
Total	**3,215**	**10,444**	**96.0%**
Hour of the Day	**Pickup Trucks Safety Belt Use**		
	Actual Total # of Obs.	**Weighted Total # of Obs.**	**Weighted % of SBU**
7 am - 8 am	62	340	91.8%
8 am - 9 am	148	423	94.3%
9 am - 10 am	347	836	97.0%
10 am - 11 am	319	1,193	94.6%
11 am - 12 pm	377	856	93.5%
12 pm - 1 pm	432	1,605	97.5%
1 pm - 2 pm	367	1,269	96.1%
2 pm - 3 pm	358	1,236	96.0%
3 pm - 4 pm	300	800	97.1%
4 pm - 5 pm	280	984	97.7%
5 pm - 6 pm	219	864	96.5%
6 pm - 7 pm	6	38	100.0%
Total	**3,215**	**10,444**	**96.0%**

Table 13. Pick-up Trucks Statewide Summary (Continued)

Gender	Pickup Trucks Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	2,558	8,341	95.5%
Female	657	2,103	98.2%
Total	**3,215**	**10,444**	**96.0%**
Age	**Pickup Trucks Safety Belt Use**		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
0-3	3	5	100.0%
4-15	52	117	100.0%
16-29	626	2,166	95.2%
30-59	2,033	6,586	95.6%
60+	501	1,570	98.8%
Total	**3,215**	**10,444**	**96.0%**
Race	**Pickup Trucks Safety Belt Use**		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Caucasian	3,063	9,688	96.1%
African American	98	579	93.8%
Asian or Pacific Islander	7	41	100.0%
Hispanic	47	136	98.5%
Native American	0	0	N/A
Total	**3,215**	**10,444**	**96.0%**

Overall, the occupants of sport utility vehicles continue to have the highest safety belt use rate of 97.8 percent. Pick-up truck drivers and passengers have the lowest overall safety belt use rate of 96.0 percent. Passenger car occupants and van/minivan occupants were observed to have an equal usage rate of 97.2%. As compared to the 2007 Annual Observation Survey, all the vehicle types have experienced an increase in the usage rate.

The safety belt use rates varied among the different days of the week and by time of day with Wednesday and Friday having the highest safety belt usage rate of 97.5 percent and the evening having slightly higher usage rates. Again, female occupants have higher use rates than their male counterparts by 1.9 percent. The safety belt usage rate was the highest for occupants between 0 to 3 years of age and drivers and front-seat passengers over the age of 60. In general, Asian or Pacific Islanders and Caucasians have the highest safety belt usage rates. The safety belt usage rate for African Americans had increased by 5.5 percent and the safety belt usage rate for Hispanics had increased by 5.6% as compared to the 2007 Annual Observation Survey.

Tables 14 through 18 summarize occupant safety belt use rates by vehicle type, demographically subdivided by gender and age. Male pick-up truck occupants continue to have the lowest rates of safety belt use (95.5%), followed by male passenger car occupants (96.2%).

Table 14. All Vehicles Statewide Demographic Summary

Demographic Data			All Vehicles Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Male	0-3	Caucasian	5	9	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**5**	**9**	**100.0%**
	4-15	Caucasian	177	574	99.1%
		African American	18	95	100.0%
		Asian or Pacific Islander	3	26	100.0%
		Hispanic	4	20	100.0%
		Native American	0	0	N/A
		Total	**202**	**715**	**99.3%**
	16-29	Caucasian	1990	6824	96.1%
		African American	197	1164	88.2%
		Asian or Pacific Islander	42	230	96.5%
		Hispanic	36	113	100.0%
		Native American	0	0	N/A
		Total	**2,265**	**8,331**	**95.0%**
	30-59	Caucasian	5213	18068	96.4%
		African American	556	3469	94.2%
		Asian or Pacific Islander	77	464	99.1%
		Hispanic	110	393	95.7%
		Native American	0	0	N/A
		Total	**5,956**	**22,394**	**96.1%**
	60+	Caucasian	1892	6682	98.2%
		African American	53	335	90.7%
		Asian or Pacific Islander	4	31	100.0%
		Hispanic	6	9	100.0%
		Native American	0	0	N/A
		Total	**1,955**	**7,057**	**97.9%**
		TOTAL	**10,383**	**38,506**	**96.3%**

Table 14. All Vehicles Statewide Demographic Summary (Continued)

Demographic Data			All Vehicles Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Female	0-3	Caucasian	2	6	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**2**	**6**	**100.0%**
	4-15	Caucasian	115	395	95.4%
		African American	10	67	100.0%
		Asian or Pacific Islander	2	3	100.0%
		Hispanic	1	3	100.0%
		Native American	0	0	N/A
		Total	**128**	**468**	**96.2%**
	16-29	Caucasian	2344	8475	97.5%
		African American	248	1504	98.5%
		Asian or Pacific Islander	36	166	100.0%
		Hispanic	19	79	100.0%
		Native American	0	0	N/A
		Total	**2,647**	**10,224**	**97.7%**
	30-59	Caucasian	4160	15061	98.4%
		African American	520	3311	97.3%
		Asian or Pacific Islander	39	238	100.0%
		Hispanic	30	98	100.0%
		Native American	0	0	N/A
		Total	**4,749**	**18,708**	**98.2%**
	60+	Caucasian	1352	5107	99.4%
		African American	60	419	97.9%
		Asian or Pacific Islander	5	43	100.0%
		Hispanic	2	7	14.3%
		Native American	0	0	N/A
		Total	**1,419**	**5,576**	**99.1%**
		TOTAL	**8,945**	**34,982**	**98.2%**

Table 15. Passenger Cars Statewide Demographic Summary

Demographic Data			Passenger Cars Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Male	0-3	Caucasian	1	1	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**1**	**1**	**100.0%**
	4-15	Caucasian	56	217	97.7%
		African American	12	60	100.0%
		Asian or Pacific Islander	3	26	100.0%
		Hispanic	1	3	100.0%
		Native American	0	0	N/A
		Total	**72**	**306**	**98.4%**
	16-29	Caucasian	1,095	3,843	96.4%
		African American	142	851	89.2%
		Asian or Pacific Islander	30	173	95.4%
		Hispanic	14	43	100.0%
		Native American	0	0	N/A
		Total	**1,281**	**4,910**	**95.2%**
	30-59	Caucasian	1,884	6,631	96.6%
		African American	307	1,996	93.9%
		Asian or Pacific Islander	48	299	99.0%
		Hispanic	33	124	94.4%
		Native American	0	0	N/A
		Total	**2,272**	**9,050**	**96.1%**
	60+	Caucasian	890	3,305	97.9%
		African American	33	201	95.5%
		Asian or Pacific Islander	3	27	100.0%
		Hispanic	5	8	100.0%
		Native American	0	0	N/A
		Total	**931**	**3,541**	**97.8%**
		TOTAL	**4,557**	**17,808**	**96.2%**

Table 15. Passenger Cars Statewide Demographic Summary (Continued)

Demographic Data			Passenger Cars Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Female	0-3	Caucasian	0	0	N/A
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**0**	**0**	**N/A**
	4-15	Caucasian	44	174	97.7%
		African American	6	44	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**50**	**218**	**98.2%**
	16-29	Caucasian	1,488	5,389	97.0%
		African American	165	985	98.6%
		Asian or Pacific Islander	22	101	100.0%
		Hispanic	7	37	100.0%
		Native American	0	0	N/A
		Total	**1,682**	**6,512**	**97.3%**
	30-59	Caucasian	1,829	6,634	98.6%
		African American	299	1,961	97.2%
		Asian or Pacific Islander	21	138	100.0%
		Hispanic	9	33	100.0%
		Native American	0	0	N/A
		Total	**2,158**	**8,766**	**98.3%**
	60+	Caucasian	761	2,857	99.3%
		African American	44	309	100.0%
		Asian or Pacific Islander	4	30	100.0%
		Hispanic	1	1	100.0%
		Native American	0	0	N/A
		Total	**810**	**3,197**	**99.4%**
		TOTAL	**4,700**	**18,693**	**98.1%**

Table 16. Sport Utility Vehicles Statewide Demographic Summary

Demographic Data			Sport Utility Vehicles Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Male	0-3	Caucasian	1	3	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**1**	**3**	**100.0%**
	4-15	Caucasian	56	188	100.0%
		African American	5	33	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	1	1	100.0%
		Native American	0	0	N/A
		Total	**62**	**222**	**100.0%**
	16-29	Caucasian	301	979	97.3%
		African American	33	174	84.5%
		Asian or Pacific Islander	5	22	100.0%
		Hispanic	9	36	100.0%
		Native American	0	0	N/A
		Total	**348**	**1,211**	**95.6%**
	30-59	Caucasian	1,086	3,932	97.2%
		African American	114	627	95.4%
		Asian or Pacific Islander	21	121	99.2%
		Hispanic	20	61	98.4%
		Native American	0	0	N/A
		Total	**1,241**	**4,741**	**97.0%**
	60+	Caucasian	321	1,151	99.4%
		African American	8	73	78.1%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**329**	**1,224**	**98.1%**
		TOTAL	**1,981**	**7,401**	**97.1%**

Table 16. Sport Utility Vehicles Statewide Demographic Summary (Continued)

Demographic Data			Sport Utility Vehicles Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Female	0-3	Caucasian	1	5	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**1**	**5**	**100.0%**
	4-15	Caucasian	33	105	93.3%
		African American	2	16	100.0%
		Asian or Pacific Islander	2	3	100.0%
		Hispanic	1	3	100.0%
		Native American	0	0	N/A
		Total	**38**	**127**	**94.5%**
	16-29	Caucasian	542	1,968	98.4%
		African American	56	341	99.7%
		Asian or Pacific Islander	10	27	100.0%
		Hispanic	10	38	100.0%
		Native American	0	0	N/A
		Total	**618**	**2,374**	**98.7%**
	30-59	Caucasian	1,238	4,803	98.4%
		African American	154	953	97.5%
		Asian or Pacific Islander	12	56	100.0%
		Hispanic	8	33	100.0%
		Native American	0	0	N/A
		Total	**1,412**	**5,845**	**98.3%**
	60+	Caucasian	270	1,000	98.9%
		African American	8	54	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**278**	**1,054**	**99.0%**
		TOTAL	**2,347**	**9,405**	**98.4%**

Table 17. Vans/Minivans Statewide Demographic Summary

Demographic Data			Vans/Minivans Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Male	0-3	Caucasian	1	1	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**1**	**1**	**100.0%**
	4-15	Caucasian	32	92	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	1	13	100.0%
		Native American	0	0	N/A
		Total	**33**	**105**	**100.0%**
	16-29	Caucasian	144	532	95.3%
		African American	10	74	100.0%
		Asian or Pacific Islander	3	12	100.0%
		Hispanic	2	12	100.0%
		Native American	0	0	N/A
		Total	**159**	**630**	**96.0%**
	30-59	Caucasian	703	2,568	96.8%
		African American	76	482	93.4%
		Asian or Pacific Islander	6	35	100.0%
		Hispanic	26	104	93.3%
		Native American	0	0	N/A
		Total	**811**	**3,189**	**96.2%**
	60+	Caucasian	273	978	97.8%
		African American	8	48	87.5%
		Asian or Pacific Islander	1	4	100.0%
		Hispanic	1	1	100.0%
		Native American	0	0	N/A
		Total	**283**	**1,031**	**97.3%**
		TOTAL	**1,287**	**4,956**	**96.5%**

Table 17. Vans/Minivans Statewide Demographic Summary (Continued)

Demographic Data			Vans/Minivans Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Female	0-3	Caucasian	0	0	N/A
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**0**	**0**	**N/A**
	4-15	Caucasian	21	81	91.4%
		African American	2	7	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**23**	**88**	**92.0%**
	16-29	Caucasian	173	596	97.8%
		African American	20	123	93.5%
		Asian or Pacific Islander	3	29	100.0%
		Hispanic	2	4	100.0%
		Native American	0	0	N/A
		Total	**198**	**752**	**97.2%**
	30-59	Caucasian	708	2519	98.4%
		African American	55	337	96.4%
		Asian or Pacific Islander	6	44	100.0%
		Hispanic	9	25	100.0%
		Native American	0	0	N/A
		Total	**778**	**2,925**	**98.2%**
	60+	Caucasian	235	961	99.7%
		African American	5	36	75.0%
		Asian or Pacific Islander	1	13	100.0%
		Hispanic	1	6	0.0%
		Native American	0	0	N/A
		Total	**242**	**1,016**	**98.2%**
		TOTAL	**1,241**	**4,781**	**97.9%**

Table 18. Pick-up Trucks Statewide Demographic Summary

Demographic Data			Pick-up Trucks Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Male	0-3	Caucasian	2	4	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**2**	**4**	**100.0%**
	4-15	Caucasian	33	77	100.0%
		African American	1	2	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	1	3	100.0%
		Native American	0	0	N/A
		Total	**35**	**82**	**100.0%**
	16-29	Caucasian	450	1,470	94.6%
		African American	12	65	72.3%
		Asian or Pacific Islander	4	23	100.0%
		Hispanic	11	22	100.0%
		Native American	0	0	N/A
		Total	**477**	**1,580**	**93.9%**
	30-59	Caucasian	1,540	4,937	95.1%
		African American	59	364	95.1%
		Asian or Pacific Islander	2	9	100.0%
		Hispanic	31	104	98.1%
		Native American	0	0	N/A
		Total	**1,632**	**5,414**	**95.2%**
	60+	Caucasian	408	1,248	98.5%
		African American	4	13	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**412**	**1,261**	**98.5%**
	TOTAL		**2,558**	**8,341**	**95.5%**

Table 18. Pick-up Trucks Statewide Demographic Summary (Continued)

Demographic Data			Pick-up Trucks Safety Belt Use		
Gender	**Age**	**Race**	**Actual Total # of Obs.**	**Weighted Total # of Obs.**	**Weighted % of SBU**
Female	0-3	Caucasian	1	1	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**1**	**1**	**100.0%**
	4-15	Caucasian	17	35	100.0%
		African American	0	0	N/A
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**17**	**35**	**100.0%**
	16-29	Caucasian	141	522	98.9%
		African American	7	55	100.0%
		Asian or Pacific Islander	1	9	100.0%
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**149**	**586**	**99.0%**
	30-59	Caucasian	385	1,105	97.1%
		African American	12	60	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	4	7	100.0%
		Native American	0	0	N/A
		Total	**401**	**1,172**	**97.3%**
	60+	Caucasian	86	289	100.0%
		African American	3	20	100.0%
		Asian or Pacific Islander	0	0	N/A
		Hispanic	0	0	N/A
		Native American	0	0	N/A
		Total	**89**	**309**	**100.0%**
		TOTAL	**657**	**2,103**	**98.2%**

6.2 Program Comparisons

Table 19 summarizes the findings of the 2005, 2006, 2007 and 2008 safety belt observational surveys for the *Click It or Ticket* Mobilization and the Annual Observation Survey. The 2008 Annual Survey resulted in a higher percentage of safety belt usage as compared to the 2008 pre and post enforcement periods.

Table 19. 2005, 2006, 2007 and 2008 Comparison

Year	2005			2006			2007			2008		
Survey	Pre-Enforcement	Post-Enforcement	Annual	Pre-Enforcement	Post-Enforcement	Annual	Pre-Enforcement	Post-Enforcement	Annual	Pre-Enforcement	Post-Enforcement	Annual
No. of Sites	192	192	168	192	192	192	192	192	192	192	192	192
Actual No. of Obs.	19,382	16,981	13,422	18,262	20,472	22,351	19,913	24,553	19,890	23,142	22,867	19,328
Weighted No. of Obs	36,021	36,842	NA	64,401	63,821	61,269	70,842	65,872	74,809	79,462	75,205	73,488
Safety Belt Use Percent	89.4%	92.9%	87.9%	89.9%	94.0%	94.3%	93.0%	93.3%	93.7%	92.6%	96.2%	97.2%

Based upon the safety belt use rate trends shown in Figure 2, continued efforts in the media and with enforcement may reduce the variation between the surveys. Continued monitoring of the media and enforcement efforts will ensure that adequate behavioral modifications are maintained throughout the year.

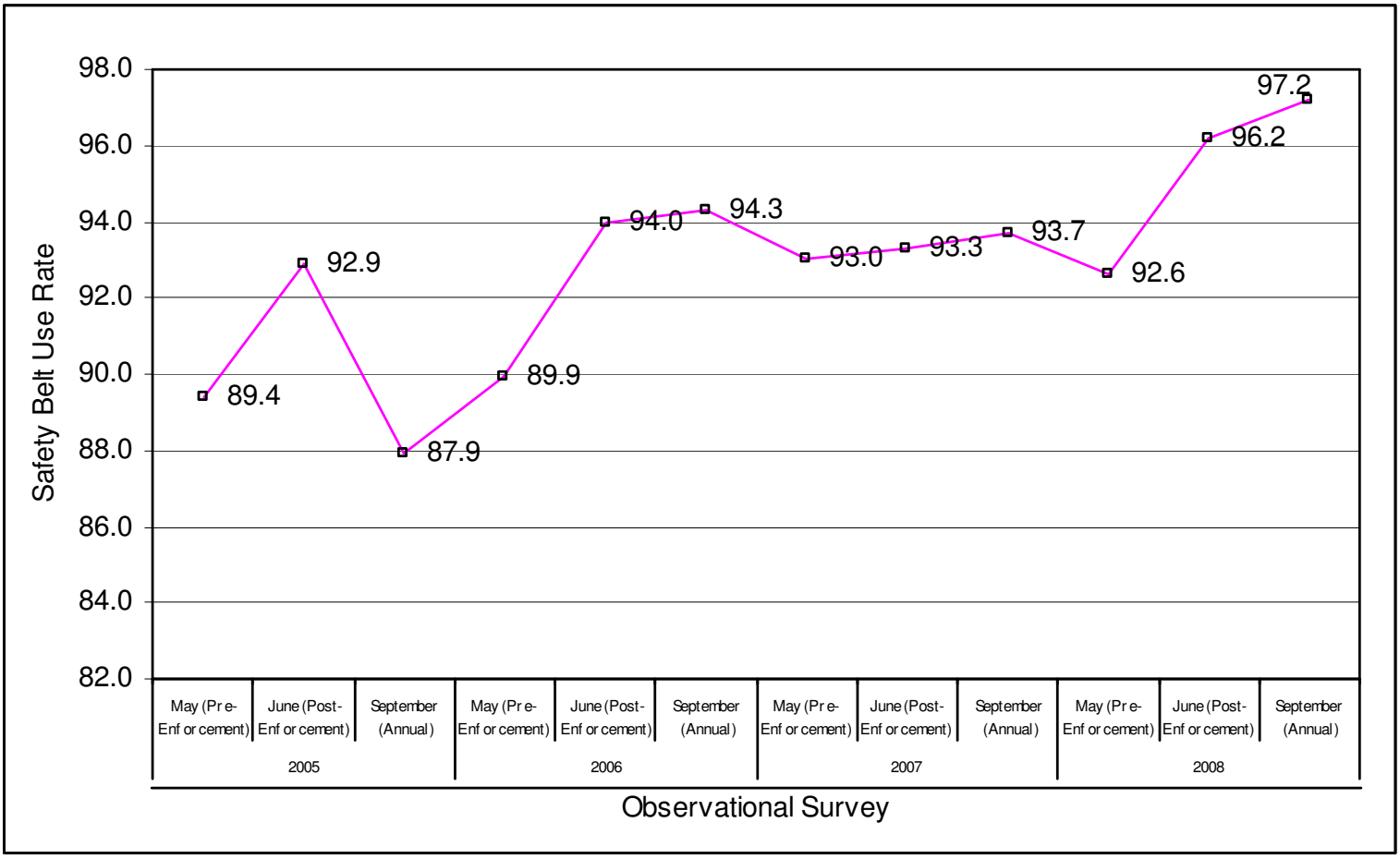

Figure 2. 2005 Through 2008 Safety Belt Use Rate Trends

6.3 Program Enhancements

As shown in the findings from the various observational surveys, males and pick-up truck drivers should be targeted in future campaigns. Continuing programs in urban areas should impact African American and Hispanic occupants while reaching a substantial portion of the state's population. This would indicate that continuing programs in urban centers may improve safety belt use rates.

The future potential of improving the safety belt use rate may yield a lower rate of increase. Future programs may focus on targeted areas where the safety belt use rates are still relatively low.

REFERENCES

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4. "The National Initiative for Increasing Safety Belt Use Buckle Up America Campaign," Eight Report to Congress, Sixth Report to the President, U.S. Department of Transportation, NHTSA, September 2005

5. NHTSA's National Center for Statistics and Analysis , "Traffic Safety Facts, 2005 Data – Occupant Protection", U.S. Department of Transportation, NHTSA, DOT HS 810 621.

6. Cochran, G., Sampling Techniques, 3rd Edition, John Wiley and Sons, Inc., Canada, 1977.

APPENDIX I – COMPLETE LISTING OF THE OBSERVATIONAL SITES IN MICHIGAN

STRATUM 1	
County	**Observation Locations**
Ingham County	1. Barnes and Eden
	2. Cavanaugh and Pennsylvania
	3. Hagadorn and Lake Lansing
	4. Haslett and Zimmer
	5. Holt and M-52
	6. I-496 and Dunkel
	7. M-106 and M-52
	8. M-43 and M-52
	9. M-43 and Putnam
	10. Michigan & Waverly
	11. Onondaga and Rossman Rd
	12. Tihart and Cornell
	13. US-127 & Saginaw
	14. US-127 and Cedar St
Kalamazoo County	1. 8 th and Q Ave
	2. 8 th and U Ave
	3. G and Riverview
	4. G Ave and 33rd
	5. H Ave and Sprinkle
	6. M-43 and 9th
	7. M-43 and M-89
	8. M-89 and 34th
	9. Sprinkle and Centre
	10. Sprinkle and Zylman
Oakland County	1. 14 Mile & Main
	2. 9 Mile and Taft
	3. Clarkton and Baldwin
	4.. Dixie and Davisburg
	5. Grand River and Taft
	6. Holly and Grange Hall
	7. I-696 and Orchard Lake
	8. I-696 and Woodward
	9. I-75 and Sashabaw
	10. M-10 & 8 Mile
	11. Northwestern & Middlebelt
	12. Snell & Rochester
	13. Walton & Lapeer

Washtenaw County	1. Ann Arbor and S Main St.
	2. Austin and Schneider
	3. Dixboro and North Territorial
	4. Geddes & Earheart
	5. I-94 and Huron
	6. I-94 and S State St
	7. Jackson & I-94
	8. Miller & N Maple
	9. Mooreville and Stoney Creek
	10. Saline Milan and Mooreville
	11. Zeeb and North Territorial
STRATUM 2	
County	**Observation Locations**
Allegan County	1. 30th and 128th
	2. M-89 and Main
	3. M-89 and US-131
	4. US-131 and 135th
Bay County	1. Adams and Kochville
	2. M-61 and Standish
	3. Munger and M-15
	4. Pinconning and I-75
Eaton County	1. Battle Creek and Ainger
	2. I-96 and Nash
	3. Kalamo and Battle Creek
	4. M-43 and Canal
	5. M-43 and M-50
	6. Nixon and Willow
	7. Royston and Island Hwy
	8. Washington and Lawrence
Grand Traverse County	1. M-72 and US-31
Jackson County	1. Michgan and Lake
	2. Michigan and US-127
	3. Rosehill and Elm
	4. US-127 and Page
	5. Wolf Lake and Cady
Kent County	1. 14 mile & Harvard
	2. 4 Mile and Walker
	3. Myers Lake and 17 Mile
	4. Sparta and Ball Creek
	5. US 131 & 10 Mile
	6. US 131 and 68th
	7. US-131 and 84th
	8. Wabasis & 10 Mile

.

Livingston County	1. Grand River and Pleasant Valley
	2. I-96 and Kensington
	3. M-36 and Dexter
	4. M-36 and M-106
	5. Old US-23 and M-59
	6. US-23 and Clyde
Macomb County	1. 22 Mile and Heydenreich
	2. 23 Mile and Van Dyke
	3. 27 Mile and Romeo Plank
	4. 34 Mile and Van Dyke
	5. I-696 and Groesbeck
	6. Jefferson and 11 Mile
	7. Moravian and Harrington
Midland County	1. Badour and Pine River
	2. Coleman and Redstone
	3. Curtis and Lake Sanford
	4. M-20 and Homer
	5. Redstone and 11 Mile
Ottawa County	1. 112th and Polk
	2. Lake Michigan and US-31
STRATUM 3	
County	**Observation Locations**
Berrien	1. I-94 and M-139
	2. Lakeside and Union pier
	3. Nickerson and Pipestone
Calhoun	1. 15 Mile & Michigan Ave
	2. Beckley Rd & Capital Ave
	3. Evanston & Michigan
	4. I-94 & Capital Ave
Clinton	1. Clark and Upton
	2. Hyde and Welling
	3. M-21 and Lowell
	4. M-21 and Shepardsville
	5. Main and Westphalia
Genesee	1. Flushing and Bellenger
	2. Grand Blanc and Duffield
	3. I-475 and Court
	4. M-57 and Vassar
	5. Mt. Morris and I-75
	6. N Elms and Beacher

Ionia	1. Bridge and State
	2. Cross and Main
Isabella	1. Winn and Blanchard
Lapeer	1. M-24 and Coulter Rd
	2. Otter Lake and Klam
Lenawee	1. Clinton Macon and Tecumseh
	2. M-50 and Pentecost Hwy
	3. US-12 and Brooklyn
Marquette	1. M-95 and Cr-LLK
	2. Washigton and McClellan
Monroe	1. Ann Arbor and Tecumseh
	2. Dunbar and Hull
	3. Ostrander and Plank
	4. Telegraph and Seventh
	5. US-23 & Plank
	6. US-23 & US-223
Montcalm	1. Condensary and Crystal
	2. M-91 and Sidney
	3. Sidney & Crystal
Muskegon	1. Ravenna Hts. And Blackmer
	2. Ravenna Hts. And Maple Rd
	3. Ravenna Hts. and Moorland
Saginaw	1. Fergus and Bishop
Shiawasee	1. I-69 and M-52
	2. Juddville and Chipman
	3. M-52 and Grand River
St. Clair	1. I-69 and Riley Centre Rd
	2. M-19 and Lambs Rd
	3. M-29 and Palms
St. Joesph	1. Banker and Klinger
	2. US-131 and Millard
Van Buren	1. CR-380 and CR-681
	2. CR-681 and CR-384
	3. I-196 and Phoenix
	4. M-51 and CR-352

STRATUM 4	
County	**Observation Locations**
Wayne County	1. 8 Mile and Grand River
	2. 8 Mile and Randolph
	3. Ecorse and Haggerty
	4. Ecorse and Monroe
	5. Eureka and Middlebelt
	6. Eureka and Telegraph
	7. Farmington and Plymouth
	8. Ford and Sheldon
	9. Geddes and Canton Center
Wayne County	10. Goddard and Fort
	11. Grand River and Schaefer
	12. Greenfield and 9 Mile
	13. Greenfield and M-10
	14. Greenfield and Plymouth
	15. Huron River and Haggerty
	16. Huron River and Waltz
	17. I-75 and Northline
	18. I-75 and Southfield
	19. I-94 and Harper
	20. I-96 and Livernois
	21. Jefferson & Randolph
	22. McNichols and Evergreen
	23. Michigan and Greenfield
	24. Middlebelt and I-96
	25. Outer Drive and Rotunda
	26. Palmer and Lilley
	27. Rawsonville and Textile
	28. Sumpter and Main
	29. Sumpter and Oakville Waltz
	30. Telegraph and Northline
	31. Van Dyke and McNichols
	32. Van Horn and Inkster
	33. Vandyke and 7-Mile
	34. Vernier and Lake Shore
	35. Vernier and Mack
	36. Waltz and Willow
	37. Warren and Southfield
	38. Wayne and Annapolis
	39. Wayne and Wick
	40. Willis and Rawsonville
	41. Woodward and Warren

APPENDIX II – STATEWIDE SAFETY BELT USE RATES BY COUNTY

Stratum and County	Annual Safety Belt Usage Observation	
	Safety Belt Usage Rate*	Standard Error
Stratum 1		
Ingham County	97.8% ± 0.80%	0.41%
Kalamazoo County	98.0% ± 0.85%	0.43%
Oakland County	96.8% ± 0.75%	0.38%
Washtenaw County	97.0% ± 0.56%	0.29%
Stratum 2		
Allegan County	98.9% ± 0.43%	0.22%
Bay County	96.0% ± 0.46%	0.24%
Eaton County	97.1% ± 1.17%	0.60%
Grand Traverse County	96.4%	N/A
Jackson County	96.8% ± 1.11%	0.57%
Kent County	98.0% ± 0.71%	0.36%
Livingston County	95.9% ± 0.66%	0.34%
Macomb County	98.4% ± 0.52%	0.27%
Midland County	93.2% ± 0.74%	0.38%
Ottawa County	95.6% ± 0.73%	0.37%
Stratum 3		
Berrien County	95.6% ± 0.51%	0.26%
Calhoun County	96.6% ± 0.78%	0.40%
Clinton County	97.4% ± 0.42%	0.21%
Genesee County	97.2% ± 1.09%	0.55%
Ionia County	97.5% ± 0.26%	0.13%
Isabella County	97.5%	N/A
Lapeer County	98.9% ± 0.03%	0.02%
Lenawee County	99.1% ± 0.88%	0.45%
Marquette County	97.5% ± 0.92%	0.47%
Monroe County	96.5% ± 1.79%	0.92%
Montcalm County	96.3% ± 0.57%	0.29%
Muskegon County	96.5% ± 1.49%	0.76%
Saginaw County	97.1%	N/A
Shiawassee County	96.2% ± 0.38%	0.19%
St.Clair County	98.2% ± 0.35%	0.18%
St.Joseph County	96.5% ± 1.02%	0.52%
Van Buren County	97.8% ± 0.39%	0.20%
Stratum 4-Wayne County	97.1% ± 0.42%	0.22%

*Weighted Safety Belt Usage ± 95% Confidence Band

APPENDIX III – STATEWIDE SAFETY BELT USE RATES BY INTERSECTION

All Vehicles Safety Belt Use				
Stratum, County and Intersection	Statewide Annual Observations			
	Actual Total # of Belted Obs.	Actual Total # of Obs.	Weighted Total # of Belted Obs.	Weighted Total # of Obs.
Stratum 1				
Ingham County				
Barnes and Eden	71	73	83	85
Cavanaugh and Pennsylvania	88	89	503	509
Hagadorn and Lake Lansing	120	121	371	374
Haslett and Zimmer	74	76	80	82
Holt and M-52	105	107	97	99
I-496 and Dunkel	79	80	264	267
M-106 and M-52	81	83	142	146
M-43 and M-52	157	158	269	271
M-43 and Putnam	133	135	378	384
Michigan and Waverly	81	83	405	415
Onondaga and Rossman Rd	59	62	69	72
Tihart and Cornell	68	68	83	83
US-127 and Cedar St	115	120	522	546
US-127 and Saginaw	98	101	1,078	1,111
Total	**1,329**	**1,356**	**4,344**	**4,444**
Kalamazoo County				
8th and Q Ave	108	110	243	247
8th and U Ave	83	85	105	108
G and Riverview	109	111	175	178
G Ave and 33rd	74	75	87	88
H Ave and Sprinkle	106	108	179	182
M-43 and 9th	118	121	621	637
M-43 and M-89	199	200	399	401
M-89 and 34th	147	148	390	393
Sprinkle and Centre	107	111	557	578
Sprinkle and Zylman	87	89	283	290
Total	**1,138**	**1,158**	**3,039**	**3,102**

Oakland County				
14 Mile and Main	124	129	775	806
9 Mile and Taft	65	67	192	198
Clarkton and Baldwin	58	60	446	462
Dixie and Davisburg	107	113	307	325
Grand River and Taft	79	81	511	524
Holly and Grange Hall	110	116	439	463
I-696 and Orchard Lake	99	101	814	830
I-696 and Woodward	91	93	461	471
I-75 and Sashabaw	70	72	127	131
M-10 and 8 Mile	86	88	648	663
Northwestern and Middlebelt	108	110	786	801
Snell and Rochester	113	119	313	330
Walton and Lapeer	112	118	394	416
Total	**1,222**	**1,267**	**6,213**	**6,420**
Washtenaw County				
Ann Arbor and S Main St.	132	135	482	494
Austin and Schneider	60	62	63	65
Dixboro and North Territorial	68	72	80	84
Geddes and Earhart	107	108	144	145
I-94 and Huron	158	162	1,075	1,103
I-94 and S State St	165	170	320	330
Jackson and I-94	147	154	482	504
Miller and Maple	93	96	158	163
Mooreville and Stoney Creek	200	206	379	390
Saline Milan and Mooreville	53	56	53	56
Zeeb and North Territorial	131	136	296	307
Total	**1,314**	**1,357**	**3,532**	**3,641**
Stratum 2				
Allegan County				
30th and 128th	107	109	121	123
M-89 and Main	122	124	265	269
M-89 and US-131	99	100	114	115
US-131 and 135th	134	135	366	369
Total	**462**	**468**	**866**	**876**

Bay County				
Adams and Kochville	63	66	113	119
M-61 and Standish	77	80	153	159
Munger and M-15	96	100	270	281
Pinconning and I-75	80	83	134	139
Total	**316**	**329**	**670**	**698**
Eaton County				
Battle Creek and Ainger	76	77	93	94
I-96 and Nash	73	76	66	69
Kalamo and Battle Creek	79	82	97	100
M-43 and Canal	83	87	261	274
M-43 and M-50	122	127	138	144
Nixon and Willow	78	78	116	116
Royston and Island Hwy	123	127	154	159
Washington and Lawrence	111	113	395	403
Total	**745**	**767**	**1,320**	**1,359**
Grand Traverse County				
M-72 and US-31	292	303	1,269	1,316
Total	**292**	**303**	**1,269**	**1,316**
Jackson County				
Michigan and Lake	83	88	122	129
Michigan and US-127	113	117	126	130
Rosehill and Elm	91	94	95	98
US-127 and Page	134	138	234	240
Wolf Lake and Cady	80	82	98	100
Total	**501**	**519**	**675**	**697**
Kent County				
14 Mile and Harvard	139	141	450	456
4 Mile and Walker	149	152	271	276
Myers Lake and 17 Mile	72	75	85	88
Sparta and Ball Creek	82	87	182	193
US 131 and 10 Mile	128	130	684	695
US 131 and 68th	140	143	619	632
US-131 and 84th	126	127	181	182
Wabasis and 10 Mile	88	91	101	104
Total	**924**	**946**	**2,573**	**2,626**

Livingston County				
Grand River and Pleasant Valley	76	79	170	177
I-96 and Kensington	72	76	244	257
M-36 and Dexter	60	61	90	92
M-36 and M-106	61	62	75	76
Old US 23 and M-59	88	92	1,111	1,162
US-23 and Clyde	71	73	103	105
Total	**428**	**443**	**1,793**	**1,869**
Macomb County				
22 Mile and Heydenreich	117	121	164	169
23 Mile and Vandyke	134	135	830	836
27 Mile and Romeo Plank	100	102	259	264
34 Mile and Vandyke	134	136	743	754
I-696 and Groesbeck	120	122	812	826
Jefferson and 11 Mile	103	105	497	507
Moravian and Harrington	99	103	132	137
Total	**807**	**824**	**3,437**	**3,493**
Midland County				
Badour and Pine River	56	60	57	61
Coleman and Redstone	59	66	63	70
Curtis and Lake Sanford	78	82	118	125
M-20 and Homer	109	117	452	485
Redstone and 11 Mile	73	78	80	85
Total	**375**	**403**	**770**	**826**
Ottawa County				
112th and Polk	58	61	73	77
Lake Michigan and US-31	102	106	256	267
Total	**160**	**167**	**329**	**344**
Stratum 3				
Berrien County				
I-94 and M-139	90	94	429	448
Lakeside and Union Pier	80	83	97	101
Nickerson and Pipestone	79	83	269	283
Total	**249**	**260**	**795**	**832**

Calhoun County				
15 Mile and Michigan Ave	67	69	79	81
Beckley Rd and Capital Ave	146	151	621	642
Evanston and Michigan	78	83	134	142
I-94 and Capital Ave	105	108	224	230
Total	**396**	**411**	**1,058**	**1,095**
Clinton County				
Clark and Upton	64	66	79	81
Hyde and Welling	64	66	56	58
M-21 and Lowell	68	70	81	83
M-21 and Shepardsville	74	76	256	262
Main and Westphalia	77	80	91	94
Total	**347**	**358**	**563**	**578**
Genesee County				
Flushing and Bellenger	85	89	600	628
Grand Blanc and Duffield	74	75	493	500
I-475 and Court	90	93	437	452
M-57 and Vassar	58	60	93	96
Mt. Morris and I-75	87	89	631	645
N Elms and Beacher	89	91	377	385
Total	**483**	**497**	**2,631**	**2,706**
Ionia County				
Bridge and State	80	82	436	447
Cross and Main	77	79	138	142
Total	**157**	**161**	**574**	**589**
Isabella County				
Winn and Blanchard	80	82	153	157
Total	**80**	**82**	**153**	**157**
Lapeer County				
M-24 and Coulter Rd	93	94	427	432
Otter Lake and Klam	85	86	90	91
Total	**178**	**180**	**517**	**523**
Lenawee County				
Clinton Macon and Tecumseh	79	80	238	241
M-50 and Pentecost Hwy	87	87	201	201

US-12 and Brooklyn	125	127	191	194
Total	**291**	**294**	**630**	**636**
Marquette County				
M-95 and Cr-LLK	168	172	250	255
Washington and McClellan	222	229	364	375
Total	**390**	**401**	**614**	**630**
Monroe County				
Ann Arbor and Tecumseh	152	155	667	680
Dunbar and Hull	124	129	149	155
Ostrander and Plank	76	83	148	162
Telegraph and Seventh	133	137	436	450
US-23 and Plank	107	113	116	122
US-23 and US-223	80	85	78	83
Total	**672**	**702**	**1,594**	**1,652**
Montcalm County				
Condensary and Crystal	73	76	122	127
M-91 and Sidney	74	77	142	148
Sidney and Crystal	72	74	124	128
Total	**219**	**227**	**388**	**403**
Muskegon County				
Ravenna Hts and Blackmer	79	83	145	152
Ravenna Hts and Maple Rd	105	109	118	122
Ravenna Hts and Moorland	63	64	64	65
Total	**247**	**256**	**327**	**339**
Saginaw County				
Fergus and Bishop	66	68	66	68
Total	**66**	**68**	**66**	**68**
St. Clair County				
I-69 and Riley Centre Rd	74	76	157	161
M-19 and Lambs	103	105	214	218
M-29 and Palms	121	123	648	659
Total	**298**	**304**	**1,019**	**1,038**
St. Joseph County				
Banker and Klinger	64	65	97	99
US-131 and Millard	103	107	432	449
Total	**167**	**172**	**529**	**548**

Shiawassee County				
I-69 and M-52	98	102	261	272
Juddville and Chipman	59	61	75	78
M-52 and Grand River	104	108	219	227
Total	**261**	**271**	**555**	**577**
Van Buren County				
CR-380 and CR-681	90	94	121	126
CR-681 and CR-384	78	80	118	121
I-196 and Phoenix	182	186	1,161	1,186
M-51 and CR-352	108	110	231	235
Total	**458**	**470**	**1,631**	**1,668**
Stratum 4				
Wayne County				
8 Mile and Grand River	78	81	1,258	1,306
8 Mile and Randolph	68	71	403	421
Ecorse and Haggerty	68	70	313	322
Ecorse and Monroe	68	71	515	538
Eureka and Middlebelt	84	86	586	600
Eureka and Telegraph	141	145	1,228	1,263
Farmington and Plymouth	84	87	1,306	1,353
Ford and Sheldon	89	93	1,152	1,204
Geddes and Canton Center	150	154	452	464
Goddard and Fort	92	95	1,182	1,221
Grand river and Schaefer	81	83	572	586
Greenfield and 9 Mile	160	162	1,272	1,288
Greenfield and M-10	154	157	675	688
Greenfield and Plymouth	90	93	788	814
Huron River and Haggerty	69	71	219	225
Huron River and Waltz	102	103	256	259
I-75 and Northline	117	121	847	876
I-75 and Southfield	119	124	1,103	1,149
I-94 and Harper	118	122	269	278
I-96 and Livernois	101	104	964	993
Jefferson and Randolph	100	101	1,343	1,356
McNichols and Evergreen	70	73	412	430
Michigan and Greenfield	79	81	497	510

Middlebelt and I-96	100	102	1,154	1,177
Outer Drive and Rotunda	90	94	381	398
Palmer and Lilley	81	84	218	227
Rawsonville and Textile	58	61	333	350
Sumpter and Main	79	81	440	451
Sumpter and Oakville Waltz	62	63	60	61
Telegraph and Northline	94	96	849	867
Van Dyke and McNichols	82	85	509	528
Van Horn and Inkster	66	68	165	171
Vandyke and 7 Mile	88	91	777	803
Vernier and Lake Shore	67	70	462	483
Vernier and Mack	176	178	560	566
Waltz and Willow	67	70	65	68
Warren and Southfield	95	98	790	815
Wayne and Annapolis	69	73	656	695
Wayne and Wick	77	80	391	406
Willis and Rawsonville	68	69	93	94
Woodward and Warren	95	96	1,419	1,434
Total	**3,796**	**3,907**	**26,934**	**27,738**